



MOSQUITO BITE PREVENTION

Not all mosquitoes are the same. Different mosquitoes spread different viruses and bite at different times of the day.

Type of Mosquito	Virus Spread	Biting Habits
 <i>Aedes aegypti</i> , <i>Aedes albopictus</i>	Chikungunya, Dengue, Zika	Primarily day time, but can also bite at night
 <i>Culex</i> species	West Nile	Evening to morning

Protect you and your family from mosquito bites.



Use insect repellent.

Use an Environmental Protection Agency (EPA)-registered insect repellent with one of the following active ingredients. When used as directed, EPA-registered insect repellents are proven safe and effective, even for pregnant and breastfeeding women.

Active ingredient	Some brand names examples *
Higher percentages of active ingredient provide longer protection	
DEET	Off!, Cutter, Sawyer, Ultrathon
Picaridin, also known as KBR 3023, Icaridin, and Bayrepel	Cutter Advanced, Skin So Soft, Bug Guard Plus, Autan
Oil of lemon eucalyptus (OLE) or para-menthane-diol (PMD)	Repel
IR3535	Skin So Soft Bug Guard Plus Expedition, SkinSmart



* Insect repellent brand names are provided for your information only. The Department of Public Health & Social Services does not endorse any brand name products.

Use insect repellent. (continued)

- Always follow the product label instructions.
- Reapply insect repellent every few hours, depending on which product and strength you choose.
- Don't spray repellent on skin under clothing.
- If you are using sunscreen, apply sunscreen first and insect repellent second.



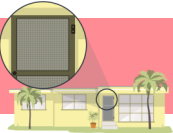
If you have a baby or child.

- Always follow instructions when applying insect repellent to children.
- Do not use insect repellent on babies younger than 2 months of age.
- Dress your child in clothing that covers arms and legs.
- Cover crib, stroller, and baby carrier with mosquito netting.
- Do not apply insect repellent onto a child's hands, eyes, mouth, and cut or irritated skin.
Adults: Spray insect repellent onto your hands and then apply to a child's face.
- Do not use products containing oil lemon eucalyptus (OLE) or para-menthane-diol (PMD) on children under 3 years of age.



Create a barrier between you and mosquitoes.

- Cover up! Wear long-sleeved shirts and long pants.
- Treat items such as boots, pants, socks, and tents with permethrin or purchase permethrin-treated clothing and gear.
- Permethrin-treated clothing will protect you after multiple washings. See product information to find out how long the protection will last.
- Do not use permethrin products directly on skin.



Mosquito-proof your home.

- Use screens on windows and doors. Repair holes in screens to keep mosquitoes outside.
- Use air conditioning when available.
- Keep mosquitoes from laying eggs in and near standing water.
- Once a week, empty and scrub, turn over, cover, or throw out items that hold water, such as tires, buckets, planters, toys, pools, birdbaths, flowerpots, or trash containers. Check inside and outside of your home.



ALL ABOUT



DENGUE FEVER & CHIKUNGUNYA

DEPARTMENT OF PUBLIC HEALTH & SOCIAL SERVICES

DIVISION OF ENVIRONMENTAL HEALTH

MOSQUITO SURVEILLANCE AND CONTROL PROGRAM



(671) 300-9579
www.dphss.guam.gov



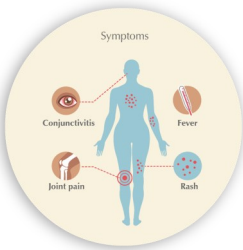
CHIKUNGUNYA VIRUS

Chikungunya is a mosquito-borne viral disease first described during an outbreak in southern Tanzania in 1952. The name chikungunya derives from a word in the Kimakonde language, meaning "to become contorted," and describes the stooped appearance of sufferers with joint pain (arthralgia).

TRANSMISSION

- Chikungunya virus is transmitted to people through mosquito bites. Mosquitoes are infected when they feed on a person already infected with the virus. Infected mosquitoes can then spread the virus to other people via bites.
- Chikungunya virus is most often spread to people by *Aedes aegypti* and *Aedes albopictus* mosquitoes. These are the same mosquitoes that transmit dengue virus. These types of mosquitoes are found throughout much of the world.

SYMPTOMS & TREATMENT



- The most common symptoms of chikungunya are fever, joint and muscle pain, headache, and rash.
- Symptoms usually range 3-7 days after being bit by an infected mosquito.
- People at risk for more severe disease include newborns infected around the time of birth, adults 65 years and up, and people with medical conditions, such as high blood pressure, diabetes, or heart disease.
- Once a person has been infected, he or she is likely to be protected from future infections.
- There is no vaccine to prevent or medicine to treat chikungunya virus. Instead, treat the symptoms by getting plenty of rest, drinking fluids to prevent dehydration, and taking acetaminophen to reduce fever and pain.

DENGUE FEVER VIRUS

With more than one-third of the world's population living in areas at risk for infection, Dengue virus is a leading cause of illness and death in the tropics and subtropics. There are four distinct, but closely related, serotypes of the virus that cause dengue (DEN-1, DEN-2, DEN-3, DEN-4).

TRANSMISSION

- Dengue virus is transmitted between people by the mosquitoes *Aedes aegypti* and *Aedes albopictus*.
- In rare cases, dengue can be transmitted in organ transplants or blood transfusions from infected donors.
- There is also evidence of transmission from an infected pregnant mother to her fetus.



SYMPTOMS & TREATMENT

- Principal symptoms of dengue fever are similar to chikungunya:
 - Fever
 - Severe headache
 - Easy bruising and bleeding
 - Joint and muscle pain
 - Rash
- Immediately go to an emergency room or closest health care provider if any warning signs appear:
 - Vomiting blood, persistent vomiting, and severe abdominal pain
 - Pale, cold, or clammy skin
 - Black, tarry stools (feces)
 - Bleeding from nose or gums
 - Red spots or patches on the skin
- As with chikungunya, the same treatment measures should be applied to dengue fever.
- Take acetaminophen to reduce fever and pain.
- Do not take aspirin or other non-steroidal anti-inflammatory drugs (NSAIDs) until dengue can be ruled out to reduce the risk of bleeding.



DENGUE HEMORRHAGIC FEVER

- Dengue hemorrhagic fever (DHF) is a more severe form of dengue infection. It can be fatal if unrecognized and not properly treated in a timely manner. DHF is caused by infection with the same viruses that cause dengue fever.
- DHF is characterized by a fever that lasts from 2 to 7 days. When fever declines, warning signs may develop. (See Dengue Fever Symptoms & Treatment)
- During this time, blood vessels are excessively permeable causing blood plasma to "leak" out of the blood vessels. The leaking fluids can cause:
 - Ascites (excessive swelling in the peritoneal cavity)
 - Pleural effusions (water in the lungs)
 - Low platelet count resulting in hemorrhaging
- This can lead to circulatory shock and possibly death.

THE AEADES MOSQUITO

The *Aedes* species of mosquitoes are the principal mosquito vectors of both dengue and chikungunya. The two most common are *Aedes aegypti* and *Aedes albopictus*.

- This species can survive year round in tropical and subtropical climates.
- Female mosquitoes lay their eggs in containers holding water in or around the home, as well as in plants and treeholes.
- These mosquitoes primarily bite humans, but can feed on pets and wild animals.
- Aedes aegypti* can be identified as a small, dark mosquito with white lyre shaped markings and banded legs.
- Aedes albopictus* can be identified as a small, dark mosquito with a white dorsal stripe and banded legs.
- The entire immature life cycle (egg to adult) can occur in as little as 7-9 days and the life span for adult mosquitoes is around 3 weeks.

